Please amend the claims as follows without prejudice or disclaimer.

IN THE CLAIMS

1-13. (Cancel)

14. (Original) A method of calibrating a fluid flow device using a single standard calibration fluid, comprising:

providing a flow meter having first and second pressure sensors;

measuring the fluid flow of a first fluid through said flow meter by calculating a first pressure difference between the pressures sensed by said first and second pressure sensors;

measuring the fluid flow of a second fluid through said flow meter by calculating a second pressure difference between the pressures sensed by said first and second pressure sensors;

determining a calibration coefficient based upon the relationship between the flow rate, the fluid density and the calculated pressure difference for said first and second fluids;

determining a relationship between said calibration coefficient and the kinematic viscosity of each said fluid; and

storing said relationship.

15. (Original) The method of claim 14, further comprising comparing said stored relationship to the measured differential pressure of a third fluid and determining the flow rate of said third fluid based upon said comparison.

16. (Original) The method of claim 14, further comprising correcting said relationship for temperature variations.

17-27. (Cancel)

28. (Original) A device comprising a set of computer readable instructions stored on one or more computer readable memories and executable by said one or more processors, said set of computer readable instructions comprising instructions executable to:

calculate a fluid flow rate; and

calculate an overall change in valve output based on fuzzy logic by:

comparing an error to a first set of membership functions to generate a first set of fuzzy inputs;

comparing a change in flow rate to a second set of membership functions to generate a second set of fuzzy inputs, wherein each fuzzy input from the first set of fuzzy inputs and the second set of fuzzy inputs is associated with an input degree of truth;

applying a set of rules to the first set of fuzzy inputs and the second set of fuzzy inputs to generate a set of fuzzy outputs, wherein each fuzzy output is associated with an output degree of truth.

associating each fuzzy output with a discrete change in valve output value; and

calculating the overall change in valve output based on the output degree of truth of one or more of the fuzzy outputs and the discrete change in valve output value associated with each of the one or more fuzzy outputs.

29. (Original) The device of claim 28, wherein the set of computer instructions further comprise instructions executable to drop fuzzy outputs associated with particular output degrees of truth.

30. (Original) The device of Claim 28, wherein the set of computer instructions further comprise instructions executable to base the output degrees of truth on the input degrees of truth.

31. (Original) The device of Claim 28, wherein the output degree of truth for a particular fuzzy output is equal to the lowest input degree of truth for a particular set of fuzzy inputs upon which the particular fuzzy output is based.

32. (Original) The device of Claim 28, wherein the set of computer readable instructions further comprise instructions executable to generate a valve control signal based on the calculated overall change in valve output.

33. (New) A fluid flow measuring and proportional fluid flow control device comprising:

a proportional flow valve having a fluid inlet and a fluid outlet;

an actuator for said proportional flow valve;

a restrictive flow element having a restrictive flow element fluid inlet and a restrictive flow element fluid outlet in fluid communication with said fluid inlet of said proportional flow valve, said restrictive flow element creating a pressure drop between said restrictive flow element fluid inlet and restrictive flow element fluid outlet;

means for measuring said pressure drop;

a controller in connection with said means for measuring said pressure drop and said actuator, the controller operable to:

calculate a flow rate based on said pressure drop;

apply fuzzy logic rules to a change in flow rate over time (dF/dt) and a flow rate error; and

determine how much to modulate said proportional fluid flow valve based on the application of fuzzy logic rules to the change in flow rate and flow rate error.

34. (New) The device of claim 33, wherein said controller is further operable to:

compare a flow rate error to a first set of membership functions to generate a first set of fuzzy inputs; and

compare a change in flow rate over time (dF/dt) to a second set of membership functions to generate a first set of second set of fuzzy inputs;

wherein each fuzzy input from the first set of fuzzy inputs ad the second set of fuzzy inputs is associated with an input degree of truth.

35. (New) The device of Claim 34, wherein said controller is further operable to apply a first set of rules to the first set of fuzzy inputs and the second set of fuzzy inputs to generate a set of fuzzy outputs, wherein each fuzzy output is associated with an output degree of truth.

36. (New) The device of Claim 34, wherein the controller is operable to:

associate each fuzzy output with a discrete change in valve output;

calculate the overall change in valve output based on the output degree of truth of one or more of the fuzzy outputs and the discrete change in valve output value associated with each of the one or more fuzzy outputs.

37. (New) The device of Claim 34, wherein said restrictive flow element creates a parasitic pressure drop.

38. (New) The device of Claim 34, wherein the restrictive flow element comprises a venturi.

39. (New) The device of Claim 34, further comprising means for sensing temperature of said fluid, and wherein said controller corrects said calculated flow rate in response to said sensed temperature.

40. (New) The device of claim 34, wherein said means for measuring said pressure drop comprises a first pressure transducer for sensing pressure of said fluid upstream of said venture and a second pressure transducer for sensing pressure of said fluid in the most restrictive part of a venturi.

41. (New) The device of Claim 33, further comprising a positioning sensor on said actuator valve.

42. (New) The device of Claim 33, wherein said restrictive flow element recovers at least 10 percent of the measured pressure drop.

43. (New) The device of Claim 33, wherein said controller uses stored fluid property data to measure and control fluid flow.

44. (New) The method of claim 14, wherein fluid flow is controlled based on fuzzy logic rules.

45. (New) A method for controlling the dispense of fluid from a dispenser to a point of use, comprising:

providing a proportional fluid flow valve having a fluid inlet and a fluid outlet

providing a restrictive flow element in fluid communication with said fluid inlet, said restrictive flow element creating a pressure drop;

sensing said pressure drop across said restrictive flow element;

determining a flow rate based on the pressure drop across said restrictive flow element;

applying fuzzy logic rules to a change in flow rate over time (dF/dt) and a flow rate error; and

modulating said proportional fluid flow valve based on the application of fuzzy logic rules to the change in flow rate and flow rate error.

46. (New) The method of Claim 45, wherein apply fuzzy logic rules to the flow rate and the flow rate error further comprises:

comparing dF/dt to a set of dF/dt membership functions to determine a degree of truth for each dF/dt membership function;

comparing the flow rate error to a set of error membership functions to determine a degree of truth for each error membership function;

generating a fuzzy output based on the degrees of truth for the dF/dt membership functions and the degrees of truth for the error membership functions;

wherein the fuzzy output corresponds to a change to be applied to the proportional fluid flow valve.

47. (New) The method of Claim 46, wherein generating a fuzzy output based on the degrees of truth for the dF/dt membership functions and the degrees of truth for the error membership functions further comprises:

selecting a smallest degree of truth for the dF/dt membership functions;

selecting a smallest degree of truth for the error membership functions;

generating the fuzzy output based on the smallest degree of truth for the dF/dt membership functions and the smallest degree of truth for the error membership functions.

48. (New) The method of Claim 45, wherein an actuator is provided to modulate said proportional fluid flow valve.

49. (New) The method of Claim 45, further comprising providing a controller responsive to said measured pressure drop for controlling said actuator.

50. (New) A fluid flow measuring and proportional fluid flow control device comprising:

a proportional flow valve having a fluid inlet and a fluid outlet;

an actuator for said proportional flow valve;

a restrictive flow element having a restrictive flow element fluid inlet and a restrictive flow element fluid outlet in fluid communication with said fluid inlet of said proportional flow valve, said restrictive flow element creating a pressure drop between said restrictive flow element fluid inlet and restrictive flow element fluid outlet;

an upstream pressure sensor and a downstream pressure sensor;

a controller in communication with said upstream pressure sensor and said downstream pressure sensor, said controller operable to:

receive an upstream pressure signal;

receive a downstream pressure signal;

calculate a flow rate based on said upstream pressure signal and said downstream pressure signal;

apply fuzzy logic rules to a change in flow rate over time (dF/dt) and a flow rate error; and

determine how much to modulate said proportional fluid flow valve based on the application of fuzzy logic rules to the change in flow rate and flow rate error.

51. (New) The device of claim 50, wherein said controller is further operable to:

compare a flow rate error to a first set of membership functions to generate a first set of fuzzy inputs; and

compare a change in flow rate over time (dF/dt) to a second set of membership functions to generate a first set of second set of fuzzy inputs;

wherein each fuzzy input from the first set of fuzzy inputs ad the second set of fuzzy inputs is associated with an input degree of truth.

52. (New) The device of Claim 51, wherein said controller is further operable to apply a first set of rules to the first set of fuzzy inputs and the second set of fuzzy inputs to generate a set of fuzzy outputs, wherein each fuzzy output is associated with an output degree of truth.

53. (New) The device of Claim 52, wherein the controller is operable to:

associate each fuzzy output with a discrete change in valve output;

calculate the overall change in valve output based on the output degree of truth of one or more of the fuzzy outputs and the discrete change in valve output value associated with each of the one or more fuzzy outputs.

54. (New) The device of Claim 53, wherein the controller is further comprises a valve driver operable to generate a valve drive signal based on a valve control signal, wherein the valve control signal is based on the change in valve output.

55. (New) A device comprising a set of computer readable instructions stored on one or more computer readable memories and executable by one or more processors, said set of computer instructions comprising instructions executable to:

calculate a fluid flow rate;

compare a variable associated with change in flow rate to a first set of membership functions to generate a first set of fuzzy inputs;

compare a variable associated with a flow rate error to a second set of membership functions to generate a second set of fuzzy inputs;

wherein in each fuzzy input from the first set of fuzzy inputs and the second set of fuzzy inputs is a associated with an input degree of truth.

56. (New) The device of Claim 55, wherein the set of instructions further comprise instructions executable to:

apply a set of rules to the fist set of fuzzy inputs and the second set of inputs to generate a set of fuzzy outputs, wherein each fuzzy output is associated with an output degree of truth.

57. (New) The device of Claim 56, wherein the set of instructions further comprise instructions executable to:

associate each fuzzy output with a discrete change in valve output value;

calculate the overall change in valve output based on the output degree of truth of one or more of the fuzzy outputs and the discrete change in valve output valve associated with each of the one or more fuzzy outputs.

58. (New) A method of calibrating a flow device comprising:

providing a flow meter having a first and second pressure sensors;

measuring the fluid flow of a first fluid through said flow meter by calculating a first pressure difference between the pressures sensed by said first and second pressure sensors;

measuring the fluid flow of a second fluid through said flow meter by calculating a second pressure difference between the pressure sensed by said first and second pressure sensors;

determining a calibration coefficient based upon the relationship between the flow rate, the fluid density and the calculated pressure difference for said first and second fluids;

determining a relationship between said calibration coefficient and the kinematic viscosity of each said fluid;

storing said relationship.

59. (New) The method of Claim 58, further comprising comparing said sorted relationship to the measured differential pressure of a third fluid and determining the flow rate of said third fluid based on said comparison.

60. (New) The method of Claim 59, further comprising regulating the flow of said third fluid based on fuzzy logic rules.

61. (New) The method of Claim 58, further comprising correcting said relationship for temperature variations.